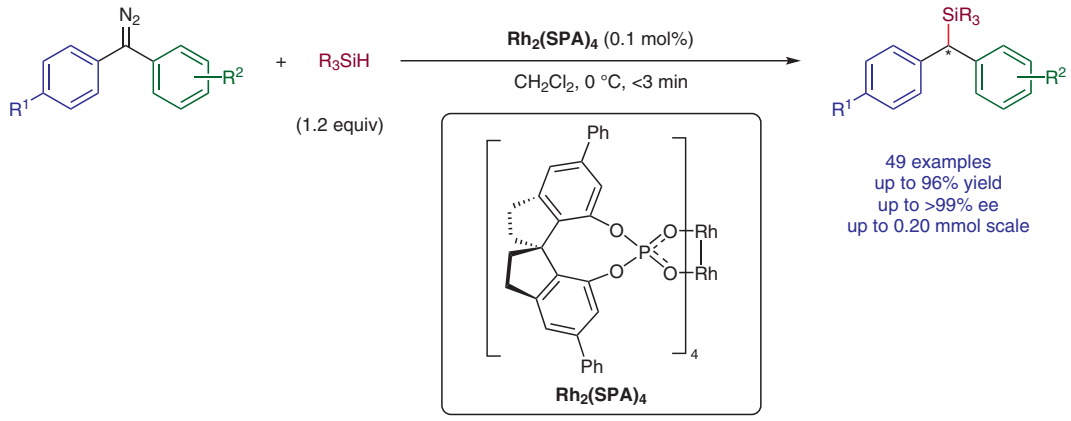
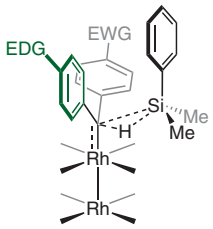
L.-L. YANG, D. EVANS, B. XU, W.-T. LI, M.-L. LI, S.-F. ZHU*, K. N. HOUK*, Q.-L. ZHOU* (NANKAI UNIVERSITY, TIANJIN, P. R. OF CHINA AND UNIVERSITY OF CALIFORNIA, LOS ANGELES, USA)

Enantioselective Diarylcarbene Insertion into Si–H Bonds Induced by Electronic Properties of the Carbenes
J. Am. Chem. Soc. **2020**, *142*, 12394–12399.

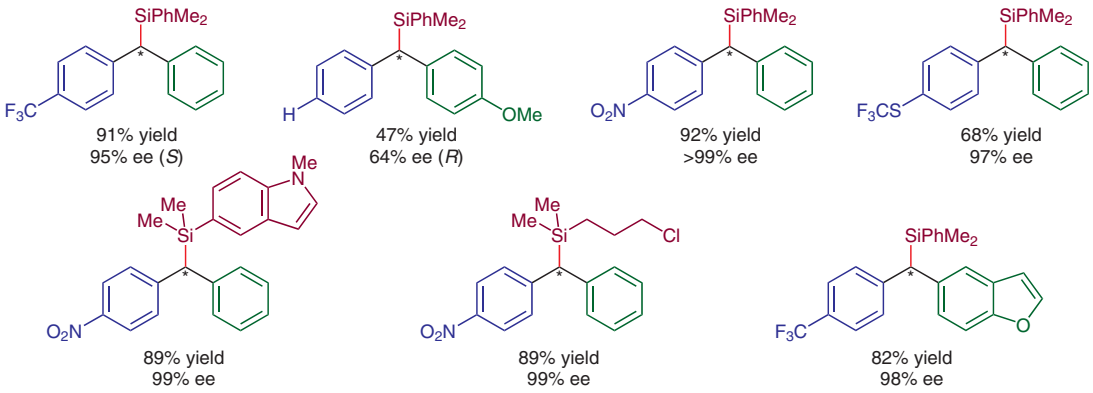
Rhodium-Catalyzed Enantioselective Diarylcarbene Insertion into Si–H Bonds



Model for selectivity:



Selected examples:



Significance: The authors describe a rhodium-catalyzed asymmetric coupling of silanes with diaryldiazomethanes. The enantioselection is shown to be induced by the electronic properties of the aryl substituents of the carbene rather than sterics.

Comment: DFT studies support the conclusion that, in the favored transition state, the more electron-rich aryl group is coplanar with the carbene empty p-orbital while the other ring is orthogonal, resulting in their differentiation.

SYNFACTS Contributors: Mark Lautens, Joachim Loup
Synfacts 2020, 16(10), 1171 Published online: 17.09.2020
DOI: 10.1055/s-0040-1706446; **Reg-No.:** L11020SF

© 2020. Thieme. All rights reserved.
Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany

Category
Metals in Synthesis

Key words
asymmetric catalysis
carbenes
rhodium catalysis
silanes

Synfact of the Month

This document was downloaded for personal use only. Unauthorized distribution is strictly prohibited.